We claim:

1. A method comprising:

providing a first communications service with a first guaranteed bandwidth, the first communications service being offered over an optical ring; and

providing a second communications service on the optical ring, the second communications service having a maximum bandwidth and a guaranteed minimum bandwidth.

2. The method of claim 1 wherein the first communications service is telecommunications.

3. The method of claim 1 wherein the first communications service is data communications.

4. The method of claim 1 wherein the second communications service is data communications.

5. A machine-readable medium that provides instructions, which when executed by a set of processors, cause said set of processors to perform operations comprising:

allocating a pipe from part of a working channel and at least part of a protecting channel of a span of a bi-directional line switched ring (BLSR), the pipe having a bandwidth;

transmitting a set of layer 2/3 traffic in the pipe; and

reducing the pipe's bandwidth when a failure occurs in the ring.

6. The machine-readable medium of claim 5 wherein said set of layer 2/3 traffic is transmitted in the working channel part of the pipe while there is a failure and a second set of Layer 2/3 traffic is transmitted in the remaining protection channel part of the pipe while there is a failure.

7. The machine-readable medium of claim 5 wherein said set of layer 2/3 traffic is multiplexed with a second set of Layer 2/3 traffic while there is a failure and the multiplexed set of Layer 2/3 traffic is transmitted in the reduced pipe while there is a failure.

8. The machine-readable medium of claim 5 wherein a second set of Layer 2/3 traffic is switched onto the protection channel part of the reduced pipe by BLSR automatic protection switching while there is a failure.

9. The machine-readable medium of claim 5 wherein the working channel and protecting channel comprise a set of timeslots.

10. The machine-readable medium of claim 5 wherein the working channel and protecting channel comprise a set of frequencies.

11. The machine-readable medium of claim 5 wherein the pipe is provisioned on every span of the BLSR.

12. The machine-readable medium of claim 5 further comprising:

prioritizing the set of layer 2/3 traffic and a second set of layer 2/3 traffic while there is a failure;

multiplexing the prioritized set of layer 2/3 traffic and the second set of layer 2/3 traffic; and

transmitting the multiplexed set of layer 2/3 traffic and the second set of layer 2/3 traffic in the reduced pipe while there is a failure.

13. The machine-readable medium of claim 5 further comprising changing concatenation of the set of layer 2/3 traffic when the failure occurs and when the failure is corrected.

14. The machine-readable medium of claim 5 further comprising allocating a second pipe having a second bandwidth on a second span of the BLSR.

15. A machine-readable medium that provides instructions, which when executed by a set of processors, cause said set of processors to perform operations comprising:

allocating a working pipe from part of a working channel and a protecting pipe from part of a protecting channel of a bi-directional line switched ring (BLSR), the working pipe having a first bandwidth and the protecting pipe having a second bandwidth;

transmitting a first set of layer 2/3 traffic in the working pipe and the protecting pipe;

protection switching a set of protected optical traffic into part of the protecting channel while there is a failure on the BLSR;

reducing the combined bandwidth of the working pipe and the protecting pipe in response to the protection switch;

transmitting the first set of layer 2/3 traffic in the working pipe while there is a failure on the BLSR; and

transmitting a second set of layer 2/3 traffic in the protecting while there is a failure on the BLSR.

16. The machine-readable medium of claim 15 wherein the protecting pipe utilizes less than all of the protecting channel while there is not a failure on the BLSR.

17. The machine-readable medium of claim 15 wherein the second set of layer 2/3 traffic is switched into the protecting pipe by BLSR automatic protection switching.

18. The machine-readable medium of claim 15 wherein the working channel and protecting channel comprise a set of timeslots.

19. The machine-readable medium of claim 15 wherein the working channel and protecting channel comprise a set of frequencies.

20. The machine-readable medium of claim 15 wherein the working pipe and the protecting pipe are provisioned on every span of the BLSR.

21. The machine-readable medium of claim 15 further comprising changing concatenation of the first and second set of layer 2/3 traffic to transmit said first and second set of layer 2/3 traffic in the working pipe and protecting pipe respectively.

22. The machine-readable medium of claim 15 further comprising provisioning a second working pipe from a second working channel and a second protecting pipe from a second protecting channel of the BLSR, the second working pipe having no more than the second bandwidth and the second protecting pipe having at least the first bandwidth.

23. A machine-readable medium that provides instructions, which when executed by a set of processors, cause said set of processors to perform operations comprising:

allocating a pipe from part of a working channel and at least part of a protecting channel of a span of a bi-directional line switched ring (BLSR), the pipe having a bandwidth while there is not a failure on the BLSR;

transmitting a set of layer 2/3 traffic in the pipe;

reducing the pipe's bandwidth when a failure occurs in the ring; and

transmitting the set of layer 2/3 traffic in the reduced pipe while there is a failure.

24. The machine-readable medium of claim 23 wherein the working channel and protecting channel comprise a set of timeslots.

25. The machine-readable medium of claim 23 wherein the working channel and protecting channel comprise a set of frequencies.

26. The machine-readable medium of claim 23 wherein the pipe is provisioned on every span of the BLSR.

27. The machine-readable medium of claim 23 further comprising:

multiplexing said set of layer 2/3 traffic and a second set of layer 2/3 traffic; and

transmitting the multiplexed layer 2/3 traffic through the reduced pipe.

28. The machine-readable medium of claim 23 further comprising:

prioritizing the set of layer 2/3 traffic and a second set of layer 2/3 traffic;

multiplexing the set of layer 2/3 traffic and the second set of layer 2/3 traffic based on priority; and

transmitting the multiplexed layer 2/3 traffic through the reduced pipe.

29. The machine-readable medium of claim 23 further comprising changing concatenation of the set of layer 2/3 traffic to transmit the set of layer 2/3 traffic through the reduced pipe.

30. The machine-readable medium of claim 23 further comprising allocating a second pipe having a second bandwidth on a second span of the BLSR.

31. A machine-readable medium that provides instructions, which when executed by a set of processors, cause said set of processors to perform operations comprising:

allocating a pipe from part of a working channel and at least part of a protecting channel of a span of a bi-directional line switched ring (BLSR), the pipe having a bandwidth while there is not a failure on the BLSR;

transmitting a first set of layer 2/3 traffic in the pipe while there is not a failure on the BLSR;

reducing the pipe's bandwidth when a failure occurs in the BLSR;

multiplexing said first set of layer 2/3 traffic and a second set of layer 2/3 traffic while there is a failure; and

transmitting the multiplexed layer 2/3 traffic in the reduced pipe while there is a failure.

32. The machine-readable medium of claim 31 wherein the working channel and protecting channel comprise a set of timeslots.

33. The machine-readable medium of claim 31 wherein the working channel and protecting channel comprise a set of frequencies.

34. The machine-readable medium of claim 31 wherein the pipe is provisioned on every span of the BLSR.

35. The machine-readable medium of claim 31 further comprising prioritizing the first and second set of layer 2/3 traffic before multiplexing.

36. The machine-readable medium of claim 31 further comprising changing concatenation of the first and second set of layer 2/3 traffic to transmit said first and second set of layer 2/3 traffic through the reduced pipe.

37. The machine-readable medium of claim 31 further comprising allocating a second pipe having a second bandwidth on a second span of the BLSR.

38. A network element comprising:

a control card to detect failures on an optical ring, to reduce a pipe's bandwidth while there is a failure on the optical ring, and to restore the pipe's bandwidth while there is not a failure on the optical ring; and

an optical processing circuitry coupled to the control card, the optical processing circuitry to transmit and receive a set of optically switched traffic, the set of optically switched traffic having a set of layer 2/3 traffic.

39. The network element of claim 38 wherein the optical processing circuitry transmits the set of layer 2/3 traffic in the reduced pipe in response to the control card performs automatic protection switching.

40. The network element of claim 38 further comprising said optical processing circuitry to transmit the set of optically switched traffic through the pipe while there is not a failure in the ring and to transmit the set of optically switched traffic through the reduced pipe while there is a failure in said ring.

41. The network element of claim 38 further comprising a layer 2/3 processing circuitry coupled to the optical processing circuitry, the layer 2/3 circuitry to receive a second and third set of layer 2/3 traffic, multiplex the second and third set of layer 2/3 traffic, and transmit the multiplexed set of layer 2/3 traffic to the optical processing circuitry.

42. The network element of claim 38 further comprising a layer 2/3 processing circuitry coupled to the optical processing circuitry, the layer 2/3 circuitry to receive a second and third set of layer 2/3 traffic, prioritize the second and third set of layer 2/3 traffic, multiplex the second and third set of layer 2/3 traffic based on priority, and transmit the multiplexed set of layer 2/3 traffic to the optical processing circuitry.

43. The network element of claim 38 further comprising said control card to direct a first set of layer 2/3 traffic to a first segment of the pipe and a second set of layer 2/3 traffic to a second segment of said pipe.

44. The network element of claim 38 further comprising the control card to reprogram concatenations when failures occur and when failures are corrected.

45. An apparatus comprising:

a control card to detect failures in a ring, to reduce a pipe's bandwidth while there is a failure in the ring, and to restore the pipe's bandwidth while there is not a failure in the ring;

a first processing circuitry coupled to the control card, the first processing circuitry to receive a first set of optically switched traffic and to extract a first set of layer 2/3 traffic from the first set of optically switched traffic;

a second processing circuitry coupled to the first processing circuitry, the second processing circuitry to transmit the extracted first set of layer 2/3 traffic through a packet mesh;

a third processing circuitry coupled to the second processing circuitry, the third processing circuitry to receive the first set of layer 2/3 traffic, process

the first set of layer 2/3 traffic, and to transmit the first set of layer 2/3 traffic; and

a fourth processing circuitry coupled to the control card and the third processing circuitry, the fourth processing circuitry to receive the first set of layer 2/3 traffic and transmit the first set of layer 2/3 traffic into the pipe.

46. The apparatus of claim 45 wherein said first and fourth processing circuitry are time division multiplex processing circuitry.

47. The apparatus of claim 45 wherein said first and fourth processing circuitry are wave division multiplex processing circuitry.

48. The apparatus of claim 45 further comprising the control card to protect the first set of layer 2/3 traffic with automatic protection switching.

49. The apparatus of claim 45 further comprising the third processing circuitry to multiplex the first set of layer 2/3 traffic with a second set of layer 2/3 traffic while there is a failure on the ring.

50. The apparatus of claim 45 further comprising the third processing circuitry to prioritize the first set of layer 2/3 traffic and a second set of layer 2/3 traffic and to multiplex the first set of layer 2/3 traffic with the second set of layer 2/3 traffic based on priority while there is a failure on the ring.

51. The apparatus of claim 45 further comprising the control card to reprogram concatenations on the optical third and fourth processing circuitry in response to the ring changing between failure and non-failure states.

52. The apparatus of claim 45 further comprising a second pipe on the ring, said second pipe having a bandwidth different from said pipe.

53. A computer implemented method comprising:

allocating a pipe from part of a working channel and at least part of a protecting channel of a span of a bi-directional line switched ring (BLSR), the pipe having a bandwidth;

transmitting a set of layer 2/3 traffic in the pipe; and

reducing the pipe's bandwidth when a failure occurs in the ring.

54. The computer implemented method of claim 53 wherein said set of layer 2/3 traffic is transmitted in the working channel part of the pipe while there is a failure and a second set of Layer 2/3 traffic is transmitted in the remaining protection channel part of the pipe while there is a failure.

55. The computer implemented method of claim 53 wherein said set of layer 2/3 traffic is multiplexed with a second set of Layer 2/3 traffic while there is a failure and the multiplexed set of Layer 2/3 traffic is transmitted in the reduced pipe while there is a failure.

56. The computer implemented method of claim 53 wherein a second set of Layer 2/3 traffic is switched onto the protection channel part of the reduced pipe by BLSR automatic protection switching while there is a failure.

57. The computer implemented method of claim 53 wherein the working channel and protecting channel comprise a set of timeslots.

58. The computer implemented method of claim 53 wherein the working channel and protecting channel comprise a set of frequencies.

59. The computer implemented method of claim of claim 53 wherein the pipe is provisioned on every span of the BLSR.

60. The computer implemented method of claim 53 further comprising:

prioritizing the set of layer 2/3 traffic and a second set of layer 2/3 traffic while there is a failure;

multiplexing the prioritized set of layer 2/3 traffic and the second set of layer 2/3 traffic; and

transmitting the multiplexed set of layer 2/3 traffic and the second set of layer 2/3 traffic in the reduced pipe while there is a failure.

61. The computer implemented method of claim 53 further comprising changing concatenation of the set of layer 2/3 traffic when the failure occurs and when the failure is corrected.

62. The computer implemented method of claim 53 further comprising allocating a second pipe having a second bandwidth on a second span of the BLSR.